

What is claimed is:

1. A network of hosts constructed and arranged for the transfer of digital information between the hosts comprising:
  - a source host;
  - a destination host;
  - a collaborating host; and,
  - a management object constructed and arranged to facilitate collaboration between the source host and the collaborating host in transferring data between the source host and the destination host, wherein the source host provides necessary control information and/or message contents when there is a need based on network information, and the collaborating host sends the data to the destination host in such a way as to make the destination host believe the data is from the source host.
2. The network of claim 1 wherein a series of collaborating hosts are used in delivery of particular packets.
3. The network of claim 1 wherein the masquerading hosts are simple hardware elements.
4. The network of claim 1 wherein the management object is executable to facilitate collaboration by forwarding the data, with identity information of the source host, to the collaborating host.
5. The network of claim 1 wherein the management object is executable to facilitate collaboration by causing the collaborating host to access the source host and obtain the data and identity-verification information of the source.
6. The network of claim 1 wherein the management object is executable to facilitate collaboration by making multiple copies of the data available so that the collaborating host has an available copy of the data.

7. The network of claim 1 wherein the source host, the destination host and the collaborating host form a rim of hosts.
8. The network of claim 5 wherein the rim of hosts is fixed.
9. The network of claim 5 wherein the rim of hosts is dynamic and changes at the direction of the management object.
10. The network of claim 7 wherein the dynamic rim of hosts changes as a function of the network information.
11. The network of claim 1 further comprising dedicated network resources for communication between the source host and the collaborating host.
12. The network of claim 1 further comprising dedicated network resources for communication between the collaborating host and the destination host.
13. The network of claim 1 wherein the data is transmitted in packet form wherein a packet contains source identifying information.
14. The network of claim 11 wherein the packet is encapsulated by the source host for transmission to the collaborating host, and the collaborating host performs de-packaging of the packet for transmission to the destination host.
15. The network of claim 11 wherein the destination host identifies incoming packets by the source identifying information.
16. The network of claim 12 wherein the source identifying information is maintained when the collaborating host sends the data to the destination host so that when the destination host reads the source identifying information, the source identifying information informs the destination host that the source host sent the data.

17. The network of claim 1 wherein the need is to avoid network congestion.
18. The network of claim 1 wherein the need is to provide load balancing.
19. The network of claim 15 wherein the load balancing further comprises balancing CPU usage.
20. The network of claim 15 wherein the load balancing further comprises balancing memory usage.
21. The network of claim 15 wherein the load balancing further comprises balancing disk space usage.
22. The network of claim 15 wherein the load balancing further comprises balancing host bandwidth.
23. The network of claim 15 wherein the load balancing further comprises balancing server loading.
24. The network of claim 1 wherein the management object uses network resources for computation and communication.
25. The network of claim 1 wherein the management object resides on an outside controller.
26. The network of claim 1 wherein the management object is divided into a plurality of objects, each of the objects residing on separate nodes on the network and acting cooperatively to manage and control the collaborating host in transferring data between the source host and the destination host.
27. The network of claim 1 wherein the network information comprises ICMP error packets.

28. The network of claim 1 wherein the network information comprises a reverse flow of packet loss information.
29. The network of claim 1 wherein the network information comprises traffic congestion information.
30. The network of claim 1 wherein the network information comprises message buffer status indicators from the destination host.
31. The network of claim 1 wherein the network uses a multicast messaging system.
32. The network of claim 1 wherein the network uses an anycast messaging system.
33. The network of claim 1 wherein the network uses a broadcast messaging system.
34. The network of claim 1 wherein the collaborating hosts each have access to a copy of the data intended for the destination host.
35. The network of claim 1 wherein the management object provides all signaling and control at a packet layer.
36. The network of claim 1 further comprising server extensions.
37. The network of claim 1 further comprising dedicated ports.
38. The network of claim 1 wherein the source host lies outside the network.
39. The network of claim 1 wherein upper protocol level hand-off is supported by the packet level mechanisms.

40. The network of claim 36 wherein the communication hand-off further comprises Internet TCP socket hand-off among the hosts.
41. The network of claim 1 wherein upper protocol level hand-off is supported by the packet level mechanisms.
42. The network of claim 1 wherein the collaboration further comprises obtaining source identification information from the source host.
43. The network of claim 39 wherein the network is the Internet and wherein the source identification information further comprises:
- an IP identifier; and,
  - a port identification.
44. The system of claim 40 wherein the upper level communication is TCP wherein source collaboration includes exchange of sequence and acknowledgment information.
45. The network of claim 40 wherein the management object is executable to facilitate collaboration by obtaining:
- an IP identifier of the source host;
  - a port identification of the source host; and,
  - the data of the source host.
46. The network of claim 1 wherein the management object is divided into a plurality of objects, each of the objects residing on separate nodes on the Internet and acting cooperatively to manage and control the hosts in transferring data between the source host and the destination host.
47. The network of claim 1 further comprising dedicated network resources for communication between the source host and the collaborating hosts.

48. The network of claim 1 further comprising dedicated network resources for communication between the collaborating hosts and the destination host.
49. The network of claim 1 wherein the collaborating hosts each have access to a copy of the data to be sent to the destination host.
50. The network of claim 1 wherein the management object resides on the source host.
51. The network of claim 1 wherein the management object resides on the collaborating host.
52. The network of claim 1 wherein the management object provides all signaling and control at a packet layer.
53. A method of communicating over a network comprising the steps of:  
    obtaining network information;  
    sending data intended for a destination host, from a source host to a collaborating host as a function of the network information;  
    facilitating collaboration between the source host and the collaborating host;  
    sending the data to the destination host from the collaborating host so that the destination host believes the data came from the source host.
54. The method of claim 53 further comprising the step of providing a rim of hosts.
55. The method of claim 54 further comprising the step of maintaining the rim of hosts as a fixed set.
56. The method of claim 55 further comprising the step of dynamically changing the rim of hosts as a function of the network information.
57. The method of claim 53 wherein the network information relates to network congestion.

58. The method of claim 53 wherein the network information relates to a need for load balancing.
59. The method of claim 58 wherein the load balancing is server load balancing.
60. The method of claim 58 wherein the load balancing is CPU load balancing.
61. The method of claim 58 wherein the load balancing is balancing memory usage.
62. The method of claim 58 wherein the load balancing is balancing disk space usage.
63. The method of claim 58 wherein the load balancing is host bandwidth load balancing.
64. The method of claim 53 wherein the step of obtaining network information further comprises obtaining ICMP error packets.
65. The method of claim 53 wherein the step of obtaining network information further comprises obtaining congestion information.
66. The method of claim 53 wherein the step of obtaining network information further comprises obtaining a reverse flow of packet loss.
67. The method of claim 53 wherein the step of obtaining network information further comprises obtaining message buffer status indicators from the destination host.
68. The method of claim 53 herein the step of sending data from a source host to a collaborating host further comprises the step of sending the data from the source host to the collaborating host along a dedicated network resource.

69. The method of claim 53 wherein the step of sending data to a destination host from the collaborating host further comprises the step of sending the data from the source host to the collaborating host along a dedicated network resource.
70. The method of claim 53 further comprising the step of storing a copy of the data on the collaborating host.
71. The method of claim 53 further comprising the step of controlling the collaborating host and the source host at a packet layer.
72. The method of claim 53 wherein the step of facilitating collaboration between the source host and the collaborating host further comprises obtaining source identification information from the source host by obtaining:
- an IP identifier of the source host;
  - a datagram number of the source host;
  - a port identification of the source host; and,
  - the data of the source host.
73. The method of claim 53 wherein the step of facilitating collaboration between the source host and the collaborating host further comprises forwarding the data, with identity-verification information of the source host, to the collaborating host.
74. The method of claim 53 wherein the step of facilitating collaboration between the source host and the collaborating host further comprises causing the collaborating host to access the source host and obtain the data and identity-verification information of the source.
75. The method of claim 53 wherein the step of facilitating collaboration between the source host and the collaborating host further comprises making multiple copies of the data available so that the collaborating host has an available copy of the data.